

critical if the information provided by these surveys is to keep pace with the rapid rate of environmental change. An implicit goal of Natural Heritage inventories is identification, and ultimately protection, of ecosystems as intact and as representative of the original landscape as possible. In setting priorities based almost entirely on high quality natural communities and rare species, there is an assumption, generally referred to as the “coarse filter,” that these elements -- particularly plant communities (Nature Conservancy, 1988) -- are markers for ecosystem integrity in general; that by protecting SNHAs possessing viable occurrences of highly ranked elements, other species of lesser conservation concern will be protected as well.

The “coarse filter,” however, frequently fails. Sites can be identified as high conservation priorities based solely on their vegetation or on the presence of a single globally rare plant, ignoring the fact that animal species critical for maintaining ecosystem integrity -- carnivores or pollinators, for example -- may be largely missing. This is particularly true for small habitat remnants, where native vegetation may persist but no functioning connections exist to other habitat areas.

The general problem is that the site-oriented approach is biased towards giving greatest weight to elements completely or largely contained within the sites but giving little consideration to surrounding habitats of lesser quality (except perhaps as buffers). Without an understanding of the wider landscape, however, it is difficult to accurately assess ecosystem integrity, since it may depend to a large degree on species that range beyond the site boundaries.

Areas where site-oriented approaches are weak are where landscape-oriented approaches are strong. Landscape analysis assumes that sites do not exist as islands and that the significance of a site depends not just on the ecological features within its boundaries but also on its relationship to other areas dispersed across the landscape. Whereas site-oriented analyses give prominence to features most easily documented in ground-based inventories -- the vegetation and localized species -- landscape-oriented analyses give prominence to the most mobile species, animals whose movements link together distant points within a region. Large sites and secondary quality habitat, particularly in the form of connectors, are correspondingly given more value in landscape analysis than in site-oriented approaches.

In practice, landscape analysis relies on data acquired by aerial or satellite photography; it is too prohibitive in terms of time or labor to use ground-based surveys to acquire the even coverage of habitats across a region of study that is essential to this approach. These data are used to make a map of land cover, which is used to describe the distribution patterns of natural communities as well as the distribution of human alterations to the landscape.

Although these cover maps are occasionally used to describe the distribution of rare community types, their low resolution makes them more suitable to describe broader categories of habitat considered relevant for explaining the distribution of animals. Animals, in fact, are typically given special prominence in landscape analysis, since they, more than plants, rely on large areas, connecting corridors, and habitat heterogeneity.